

RESPONSE TO OFFICE ACTION

A. *Status of the Claims*

Claims 1-84 are pending. Claims 39-84 are withdrawn. Claims 1 and 22 have been amended. Therefore, claims 1 through 38 will be pending upon entry of these amendments.

B. *Information Disclosure Statement*

The Office stated that due to the number of references cited in the Information Disclosure Statement (IDS) submitted on June 10, 2002, and a lack of any statement regarding the relevancy of the references, an undue burden is placed upon the Office. Applicants are unaware of rules stipulating the number of references that can be submitted for consideration. Applicants request that all the references cited in the IDS as well as the two references cited in the Supplemental IDS submitted on April 11, 2003, be entered and made of record. Applicants respectfully assert that their disclosure is proper under the applicable rules.

C. *Drawing Objections*

The Office has objected to the drawings under 37 CFR 1.83(a), alleging that the capillaries (claims 10-16) and the dimensions of the “footprint” (claims 36-38) must be included in the figures or canceled from the claims. Applicants respectfully traverse.

37 C.F.R. § 1.81 states, “The applicant for a patent is required to furnish a drawing of his or her invention where necessary for the understanding of the subject matter sought to be patented” (emphasis added). See also 35 U.S.C. § 113. In Rule 1.83, the content of such a drawing (if necessary) is set forth. In other words, the law does not require that each and every element of the claims always be illustrated.

Here, a separate drawing for each capillary limitation recited would not be necessary for an understanding of the subject matter of claims 10-16. A person of ordinary skill in the art would understand the subject matter of claims 10-16 reciting limitations of a sample comprised in one or more capillaries, even if a box labeled “capillary” and a box labeled “sample” within the “capillary” box were not included, within, for instance, the cuvette of FIG. 1.

Additionally, providing a separate drawing for each dimension recited in claims 36 through 38 would not be necessary for an understanding of the subject matter. A person of ordinary skill in the art would understand that a device may be scaled to a desired dimension without having a figure specifically drawing out the dimension of the device.

Moreover, the Examiner has presented no evidence to suggest that a separate drawing for each limitation reciting a particular number of capillaries or a particular footprint would be necessary to someone of ordinary skill in the art for understanding claims 10-16 or claims 36-38, respectively. For instance, the Examiner has not included an affidavit pursuant to MPEP 2144.03. Applicants believe that corrected drawing sheets are not necessary in light of the foregoing remarks and respectfully request the objection to the drawings be withdrawn.

D. Specification Objection

The Office objected to the Abstract of the disclosure for exceeding 150 words. Applicants have amended the Abstract (please refer to the **AMENDMENT TO THE SPECIFICATION**, page 2 of this response). Applicants removed one sentence only to shorten the Abstract; removal of that sentence was not done for any substantive reason. Applicants respectfully request that the objection to the Specification be removed.

E. Claim Objections

Claims 22 and 24 are objected-to due to informalities. The Office requests that the term "TTL logic" be defined. Claim 22 and the Specification, specifically the paragraph beginning at line 11, page 7, have been amended to include the proper designation for "TTL." One with ordinary skill in the art would understand that "TTL" refers to "transistor-transistor logic." As such, no new matter has been added. Applicants respectfully request the objection to claim 22 and claim 24, which is dependent from claim 22, be removed.

F. Section 102 Rejections

Claims 1-5 and 7-11 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,784,157 to Gorfinkel *et al.* In view of the comments below, Applicants respectfully traverse.

Amended independent claim 1 now recites, in part, “a timing circuit coupled to the one or more lasers and configured to generate the two or more excitation lines sequentially according to a timing program that pulses the one or more lasers on and off in a firing sequence to produce time-correlated fluorescence emission signals from the sample.” Support for the amendment may be found, for example, on page 43 of the Specification. In a non-limiting example, the timing circuit may perform the following sequence:

1. The first laser in sequence is pulsed for 50 pico-seconds.
2. A 500 pico-second time delay is applied after the laser has been switched off. Note that during the delay period no fluorescence is sampled by the detector.
3. A fast photon counter is used to look for any fluorescent response from the labeled DNA during the ensuing 50 nano-second gated window.
4. Steps 1 through 3 are repeated in sequence for each laser in the subcycle.
5. The pico-second pulsed excitation and nano-second gated detection windows cycle continuously.

See Specification, page 55, lines 20-25.

In contrast, the cited anticipation reference discloses obtaining information about fluorophores by phase-resolved measurements employing multiple frequencies instead of a particular firing sequence. The cited anticipation reference discloses providing two lasers modulated (via the current driver) in a time domain at radio frequencies f_1 and f_2 , respectively. (*See* column 5, lines 14-15 and FIG. 1). The Office contends that this current driver is equivalent to the timing circuit required by claim 1 and can generate the two or more excitation lines sequentially according to a timing program. This assumption is incorrect. The current driver cannot be construed as the recited timing circuit because it only controls the current sources of the lasers at a particular frequency. In fact, the two lasers “are pumped by low-voltage current sources, generating up to 100 mW of power in the continuous wave (CW) regime.” (Column 10, line 65 through Column 11, line 1. Emphasis added). As such, the lasers of the cited anticipation reference appear to be controlled by the current sources at a desired frequency and are generated in a continuous manner and not in an ON and OFF firing sequence as recited in amended claim 1.

The Office also refers to FIG. 6 of the cited anticipatory reference as being configured to generate the two or more excitation lines sequentially according to a timing program to produce time-correlated fluorescence emission signals from the sample. FIG. 6 illustrates a fiber with a refractive index profile along the fiber. The fiber combines laser radiation and “delivers the radiation to the area of electrophoretic separation.” (Column 10, lines 13-16). The fiber does not generate any lines, but rather is used to focus the radiation from a laser to a sample.

The device of the cited anticipation reference does not disclose a timing circuit coupled to the one or more lasers and configured to generate the two or more excitation lines sequentially according to a timing program that pulses the one or more lasers on and off in a firing sequence to produce time-correlated fluorescence emission signals from the sample as recited by amended claim 1. For at least the reasons set forth above, claim 1, and all claims dependent from claim 1, are not anticipated or otherwise rendered unpatentable. Applicants respectfully request removal of the current § 102 rejections.

G. Section 103 Rejections

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being allegedly obvious in view of Gorfinkel combined with U.S. Patent No. 5,504,337 to Lakowicz *et al.* Claims 12-16 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious in view of Gorfinkel. Claims 17-38 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious in view of Gorfinkel combined with U.S. Patent No. 4,866,930 to Chao *et al.* In light of the above comments, Applicants respectfully traverse.

1. Claim 6 is Not Obvious

As noted above, Gorfinkel does not teach or suggest all the limitations of independent claim 1. Lakowicz, while contemplating an apparatus for identifying particles labeled with fluorophores, does not supply the above-noted features absent from the Gorfinkel reference. For example, Lakowicz does not teach or suggest a timing circuit coupled to the one or more lasers and configured to generate the two or more excitation lines sequentially according to a timing program that pulses the one or more lasers on and off in a firing sequence to produce time-correlated fluorescence emission signals from the sample as recited by amended claim 1.

Referring to FIG. 2 of the Lakowicz reference, the laser 1 is defined to be a mode-locked laser that is “self-triggering and requires no external timing.” (Column 9, lines 1-2). As such, there is not a need or desire for a timing circuit to generate two or more excitation lines. Gorfinkel and Lakowicz, either separately or in combination, do not teach or suggest all the limitations of claim 1, and therefore claim 1 is patentably distinct. For the same reasons, claim 6, which depends from claim 1, is also patentably distinct over the cited references.

2. *Claims 12-16 are Not Obvious*

Rejected dependent claims 12-16 are in condition for allowance for at least the reasons given above with respect to independent claim 1. Namely, the Gorfinkel reference does not disclose or suggest explicit elements required by claim 1.

3. *Claims 17-38 are Not Obvious*

Applicants assert that Gorfinkel in combination of with the disclosure of Chao, do not teach or suggest all the limitations of claim 1. Chao contemplates an apparatus for fluorescence spectroscopy (FIG. 1). The apparatus is configured to “circumvent the need to repetitively excite a signal over a period of time.” (Column 4, line 21). The laser emits a single excitation pulse and the fluorescence transient is detected and subsequently converted into an optical image. (Column 4, lines 32-46 *discusses the construction of an image from the photons emitted from one single pulse*). The system of Chao does not need, disclose, or suggest a timing circuit coupled to the one or more lasers and configured to generate the two or more excitation lines sequentially according to a timing program that pulses the one or more lasers on and off in a firing sequence to produce time-correlated fluorescence emission signals from the sample.

Thus, in light of the foregoing comments, Applicants respectfully request the withdrawal of the § 103(a) rejections to claims 6 and 12-38 based upon these references.

PETITION FOR EXTENSION OF TIME

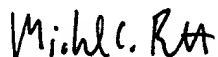
Pursuant to 37 C.F.R. § 1.136(a), Applicants petition for an extension of time of three-months up to and including March 22, 2005, in which to respond to the outstanding Action. A check in payment of the small entity petition fee for a three-month extension of time (\$510.00) is enclosed. Should any additional fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to the enclosed materials, or should an overpayment be included, the Commissioner is authorized to deduct or credit the appropriate fees to or from Fulbright & Jaworski Deposit Account No. 50-1212/BAYM:002US/MCB.

CONCLUSION

Applicants believe that the foregoing remarks fully respond to all outstanding matters for this application. Applicants reserve the right to raise additional arguments concerning Gorfinkel or other cited art, if necessary. Applicants respectfully request that the rejections of all claims be withdrawn so the claims may swiftly pass to issuance.

Should the Examiner desire to sustain any of the rejections discussed in relation to this Response, the courtesy of a telephone conference between the Examiner, the Examiner's supervisor, and the undersigned attorney at 512-536-3018 is respectfully requested in advance.

Respectfully submitted,



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Date: March 22, 2005